

HOW I DO IT

Video-Assisted Neck Surgery: Endoscopic Resection of Benign Thyroid Tumor Aiming at Scarless Surgery on the Neck

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INTRODUCTION

Endoscopic surgery is becoming more widely used because of its low invasiveness and cosmetic advantages. The application of this technique to the neck, where the skin is usually exposed and operation scars may be clearly visible, is limited to parathyroid surgery [1]. No clinical reports have yet been presented concerning its application to the thyroid operation, performed most frequently among operations on the neck. The reasons include the narrowness of the operational visual field, the necessity of a fine operational technique, and the risk of injury to surrounding nerves and blood vessels. We have overcome these difficulties and have been extirpating thyroid tumors, leaving only a tiny scar on the exposed neck with the endoscopic technique, video-assisted neck surgery (VANS).

The patient is placed in a supine position with the neck hyperextended under general anesthesia. As shown in Figure 1, a 3 ~3.5-cm transverse incision (a) is made 1.5 cm below the clavicle on the tumor side; two 0.5-mm small incisions at the opposite part (b) in the same position and the lateral neck area (c) on the tumor side are also made. The lower layer of the platysma is fully excoriated, as shown in Figure 1. To avoid harmful effects caused by CO₂ insufflation for operative space, such as blood vessel compression, air embolus, subcutaneous emphysema, and hypercarbia, two pieces of Kirschner wire are inserted transversely in the subcutaneous tissue of the anterior neck by applying the abdominal wall-lift method (Mizuho, Bunkyo-ku, Tokyo, Japan)[2]. Furthermore, the use of the anterior neck-lift method without insufflation with CO₂ provides an excellent view, as shown in Figure 2. The major operative manipulation including incision and excoriation is performed (a) by chiefly using an ultrasonically activated scalpel (Harmonic scalpel; Johnson & Johnson, Cincinnati, OH). A 5-mm laparoscope and graspers are inserted from (b)

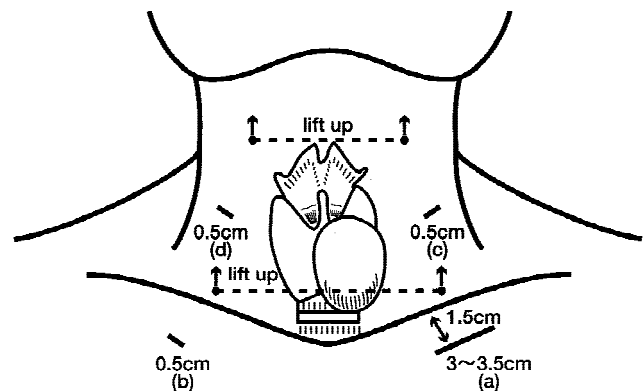


Fig. 1. Schema of the incised positions (a,b,c) and excoriated area under the platysma (shadow) where two pieces of Kirschner wire were transversely inserted (two dotted lines).

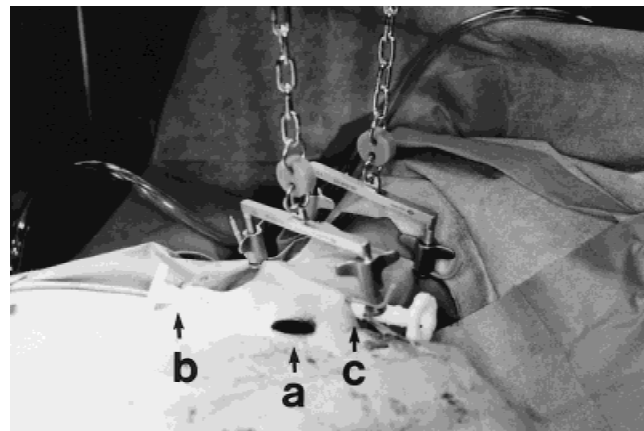
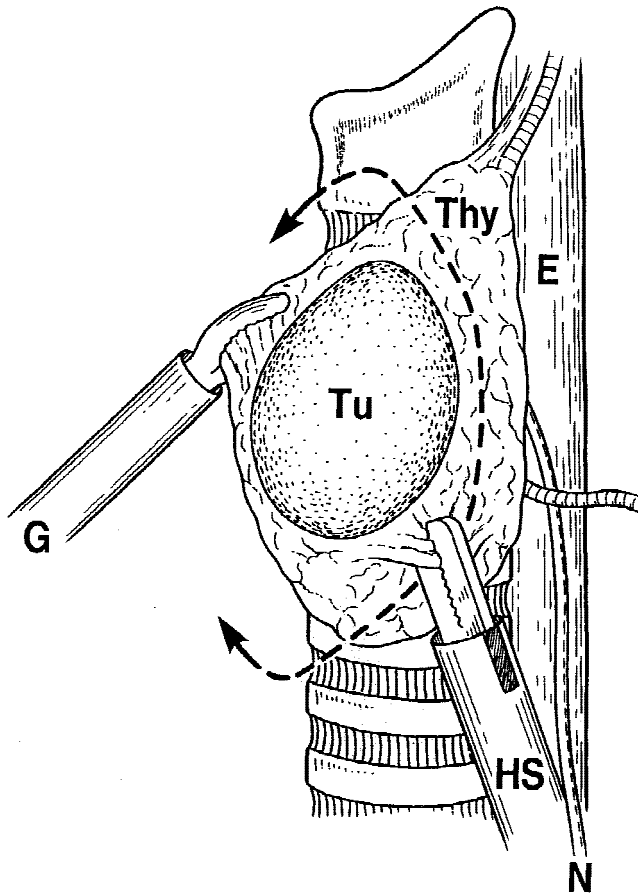


Fig. 2. Picture of an anterior neck-lift method.

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Tu : Tumor
Thy : Normal thyroid
E : Esophagus
N : Recurrent nerve
HS : Harmonic Scalpel
G : Grasper
--- : Resecting line

Fig. 3. Schema of operative procedure using grasper and "Harmonic scalpel."

and (c) at the right time. A small incision (d) is made in the lateral neck area. In case of difficulty, the incision is made in the upper pole of the thyroid.

For a lateral approach to the thyroid, a space between the sternothyroid muscle and omohyoid muscle is divided and exposed the thyroid by splitting the sternothyroid muscle. With the normal thyroid tissue held and pulled with graspers, the tumor is resected and extirpated from the normal thyroid tissue with a "Harmonic

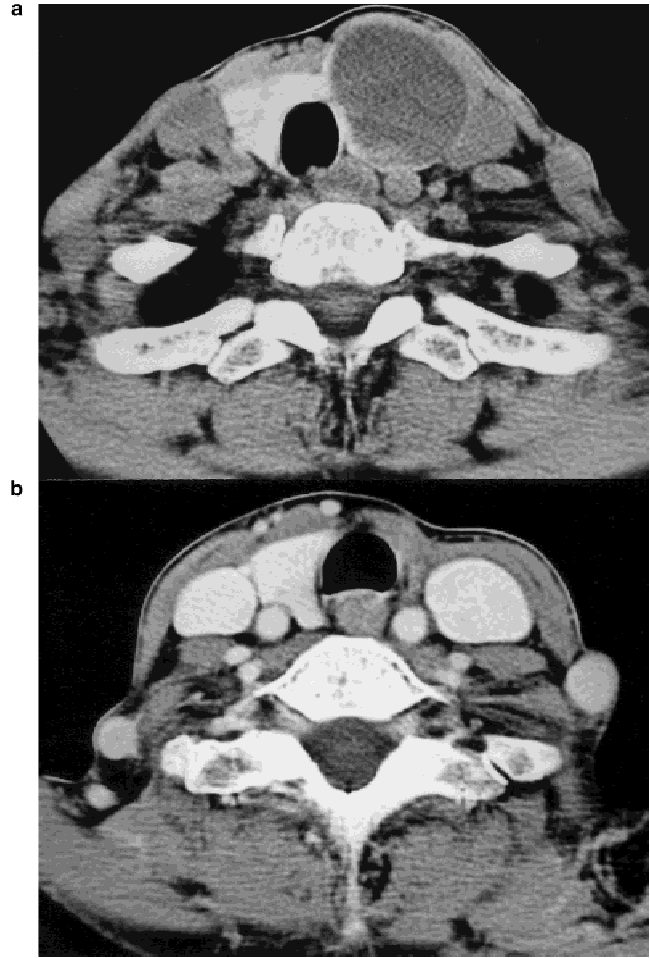


Fig. 4. Preoperative (a) and postoperative (b) neck computed tomogram in patient with nodular goiter.

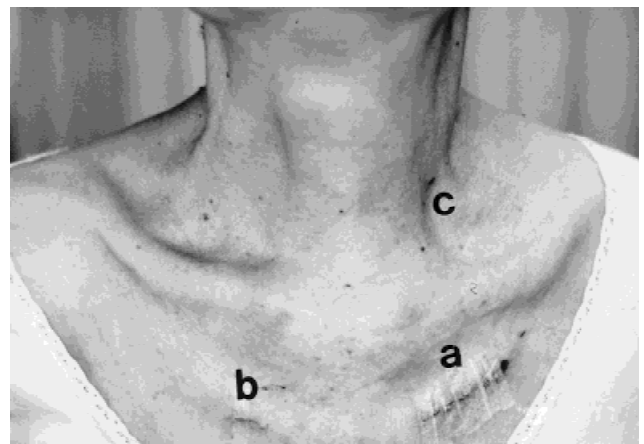


Fig. 5. Macro photograph of anterior neck 3 days after endoscopic thyroid surgery.

scalpel" (Fig. 3). No additional hemostatic manipulation is required after the tumor resection with the Harmonic Scalpel.

For closing the wounds, the subcutis is tightly su-

tured with 4-0 absorbable monofilament thread with atraumatic needle, followed by fixing of the skin only with tape. Figure 4 shows preoperative (a) and postoperative (b) computed tomography (CT) results of one of our cases, while Figure 5 shows a macrophotograph of the anterior neck of this case 3 days after operation.

We believe that this technique is the best approach cosmetically, with a small amount of bleeding and no danger of complications. We also believe that, in the future, the ease of confirmation of the recurrent laryngeal nerve on a video-assisted monitor may permit application of this technique to an early stage of well-differentiated papillary carcinoma and lymph node dissection. Up to now, this technique has been applied in 25 cases. All patients made satisfactory progress after the operation

and were able to leave the hospital on the third postoperative day.

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